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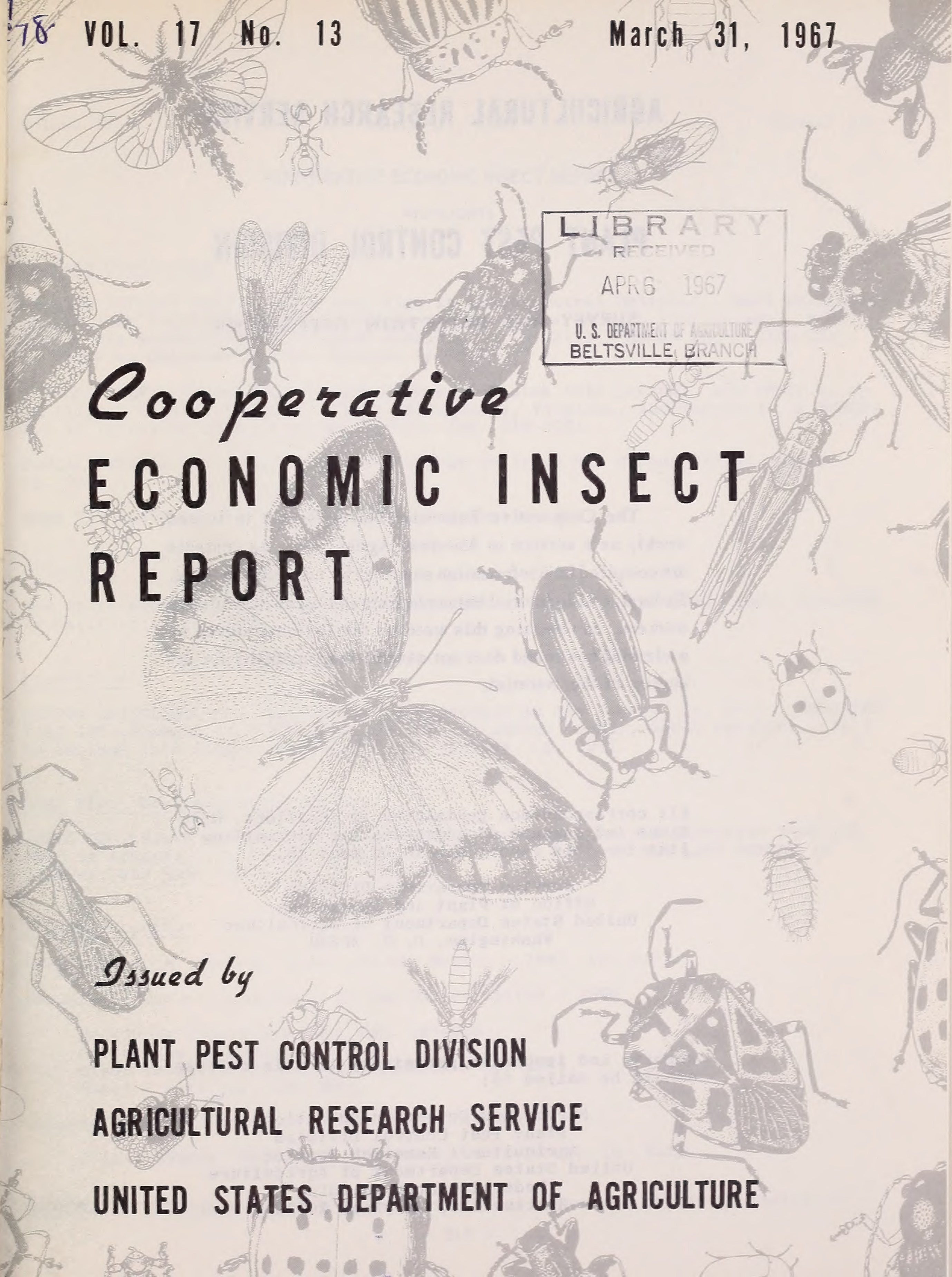

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 17 March 31, 1967 Number 13

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

SPOTTED ALFALFA APHID counts very high in south-central Oklahoma. BEET LEAFHOPPER populations increased in Texas and New Mexico compared with 1966 survey. Host plants are widespread and in good condition (p. 217). BROWN WHEAT MITE heavy on wheat in Oklahoma and New Mexico. (p. 219).

ALFALFA WEEVIL increasing; reported from 10 States this period. PEA APHID heavy in Tillman County, Oklahoma; light in Arkansas, Virginia, and Maryland. A MEALYBUG is infesting alfalfa in California. (pp. 219-220).

POPLAR PETIOLE GALL APHID heavy on cabbage in lower Rio Grande Valley, Texas. (p. 221).

HORN FLY heavy on beef cattle in Mississippi. (p. 224).

Detection

New State records include a LEAF ROLLER MOTH in Delaware (p. 225), and a MEALYBUG in California (p. 223).

Prediction

MEADOW SPITTLEBUG not expected to be a problem in New Jersey. (p. 220). IMPORTED FIRE ANT numerous in fields and pastures in Jasper County, South Carolina. Will be serious this summer if controls not applied. (p. 224).

Some First Occurrences of Season

LYGUS BUG adults in New Mexico; EASTERN TENT CATERPILLAR and NANTUCKET PINE TIP MOTH in Arkansas; FOREST TENT CATERPILLAR in Mississippi; ELM LEAF BEETLE in Arizona; and HORN FLY adults in Alabama.

Special Reports

Beet Leafhopper Survey, Texas and New Mexico - 1967. (p. 217).

Summary of Insect Conditions in the United States - 1966

- Deciduous Fruits and Nuts (pp. 227-233).
- Citrus (pp. 233-234).
- Other Tropical and Subtropical Fruits (p. 234).
- Small Fruits (pp. 234-236).

Insects Not Known to Occur in the United States

A LEAF BEETLE (*Marseulia dilativentris* (Reiche)). (p. 237).

Reports in this issue are for week ending March 24 unless otherwise indicated.

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WEATHER BUREAU'S 30-DAY OUTLOOK

MID-MARCH TO MID-APRIL

The Weather Bureau's 30-day outlook for mid-March to mid-April calls for temperatures to average above seasonal normals in the southern half of the Nation except for below normal along the west coast. Below normal temperatures are indicated for the Pacific Northwest, parts of the Great Basin and across the northern tier of States from Montana to New England. In unspecified areas, near normal average temperatures are expected, but with considerable week to week fluctuations. Precipitation is expected to exceed normal over the Great Basin and the west coast States as well as in the northern border States from Montana to New England and the Ohio Valley and the Middle Atlantic Coast States. Subnormal totals are indicated for most of the central and southern Plains as well as the Gulf and South Atlantic Coast States. Elsewhere near normal precipitation is in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D. C. 20250. Price $5.00 a year.
For the weather of the week see page 226.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

GREENBUG (Schizaphis graminum) - NEW MEXICO - Averaged 2-10 per linear foot in Chaves County wheat fields; heavier in Curry County. (Nielsen et al.). OKLAHOMA - Counts ranged up to 5,000 per linear foot in a field near Marshall, Logan County. Ranged 45-900 per linear foot in Jackson, Kiowa, and Tillman Counties, and up to 100 per linear foot in Creek County. Moderate to heavy in 1 northeast, 1 northwest, 1 west-central, 4 south-central, and 4 central counties. (Okla. Coop. Sur.). ARKANSAS - Not serious in Pope County where field was treated. (Barnes). Moisture and warm weather aided growth of small grain. Light to medium infestations less harmful to vigorously growing crops. Increased, but noneconomic in northwest area; ranged 100-200 per 100 sweeps in Washington County. (Ark. Ins. Sur.). ALABAMA - Heavy, 25-100 per sweep, on vetch along borders of isolated fields in Montgomery County. (McQueen).

SPOTTED ALFALFA APHID (Therioaphis maculata) - MISSISSIPPI - Very light on alfalfa in Pontotoc County. (Dinkins). ARKANSAS - Increased in Washington County, but still relatively low; 25-50 per square foot. (Ark. Ins. Sur.). OKLAHOMA - Ranged 600-800 per square foot of crown on alfalfa in Tillman County. Heavy in Comanche and Garvin Counties, and moderate in Cleveland County. (Okla. Coop. Sur.). ARIZONA - Continues light on alfalfa in Yuma County. Some fields required control. (Ariz. Coop. Sur.).

ARMY CUTWORM (Chorizagrotis auxiliaris) - NEVADA - Late-instar larvae light on alfalfa at Lovelock, Pershing County. (Arnett). None noted in Reno area, Washoe County. (Bechtel, Horton).

CORN EARWORM (Heliothis zea) - ARIZONA - Several fields of lettuce in Dome, Yuma County, treated for this pest. (Ariz. Coop. Sur.).

Beet Leafhopper Survey, Texas and New Mexico - 1967

The beet leafhopper (Circulifer tenellus) survey was begun February 23 and completed March 3, 1967. The survey was conducted in 51 counties in Texas and 6 counties in New Mexico, with 101 stops made in Texas and 25 stops in New Mexico. Host plants were present at 81 percent of the stops in Texas and 80 percent of the stops in New Mexico. The number of beet leafhoppers per 100 square feet was 26 in Texas and 86 in New Mexico.

Significant observations: Texas - Unusually dry conditions were noted throughout the survey area. Host plants were generally widespread and uniformly distributed. Plant conditions ranged from fair in the northern portion of the survey area to excellent in the southwestern portion. Beet leafhoppers were found at the rate of 26 per 100 square feet in 1967 compared with 8 per 100 square feet in 1966. New Mexico - Population counts increased to 86 per 100 square feet in 1967 compared with 32 in 1966. Host plants were widespread and in good condition.

In order that the survey information be more specific, the following breakdown is presented.

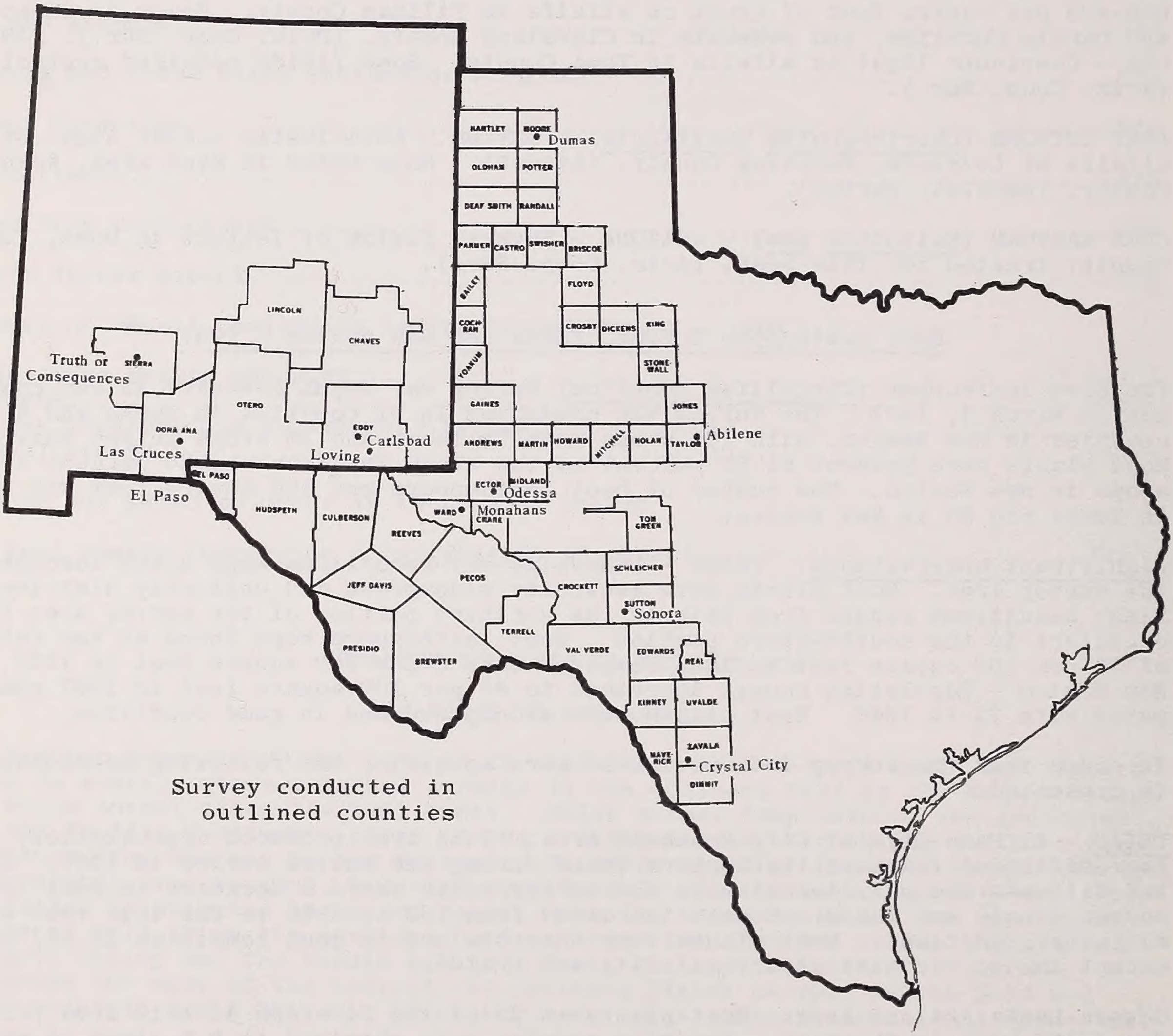
TEXAS - El Paso-Crystal City-Monahans Area. This area produced approximately four-fifths of the beet leafhoppers found during the entire survey in 1967. Crystal City was the only location on the survey route where a decrease in beet leafhopper counts was found. Counts increased from 162 in 1966 to 826 this year at all other locations. Host plants were numerous and in good condition in all areas except in the vicinity of Crystal City and Uvalde.

Odessa-Dumas-Abilene Area. Host plants at 23 of the 34 stops in this area produced 136 beet leafhoppers. Positive results were obtained at 8.5 times as many stops this year as in 1966. Beet leafhopper numbers increased from 70 in 1966 to 136 in 1967, or slightly less than 100 percent. Stops with positive finds were evenly distributed. (Continued on page 218.)

Sonora-Abilene-Monahans Area. Beet leafhoppers were found at 8 of the 14 stops in this area, the same as in 1966. The total count, however, increased from 70 in 1966 to 102 in 1967. The condition of host plants in the area ranged from fair to poor.

NEW MEXICO - Beet leafhoppers were distributed all along the survey route. The Carlsbad-Loving Area, the Roswell Area, and the Las Cruces-Truth or Consequences Area showed large increases. Host plants were widely distributed and in good condition. (PPC and cooperating agencies).

BEET LEAFHOPPER SURVEY, TEXAS AND NEW MEXICO - 1967



Survey conducted in
outlined counties

SMALL GRAINS

BROWN WHEAT MITE (*Petrobia latens*) - OKLAHOMA - Ranged 200-1,000 per linear foot on wheat in Tillman and Kiowa Counties and up to 1,200 per linear foot in Jackson County. Moderate to heavy in many northwest, north-central, west-central, central, and southwest counties; light to moderate in Cimarron County. Diapause eggs, which will hatch in the fall, reported in Custer and Payne Counties. Some infestations expected to decrease because of recent rains. (Okla. Coop. Sur.). NEW MEXICO - Spotty infestations noted on wheat in Curry County; some damage present in fields with heavier infestations. (Nielsen, Campbell). UTAH - Active but not numerous on fall dryland wheat in Nephi, Juab County. (Knowlton).

CLOVER MITE (*Bryobia praetiosa*) - UTAH - Active on wheat in Juab County. (Knowlton).

AN APHID (*Rhopalosiphum padi*) - OKLAHOMA - Averaged 2,000 per linear foot on barley in Tillman County. (Okla. Coop. Sur.).

A LEAFHOPPER (*Dikraneura carneola*) - UTAH - Active along margins of wheat in Juab County. (Knowlton).

CUTWORMS - COLORADO - None found in wheat; conditions favorable for an increase above 1966 season. (Jenkins).

FORAGE LEGUMES

ALFALFA WEEVIL (*Hypera postica*) - DELAWARE - First-instar larvae averaged 1-2 per 10 alfalfa stems in New Castle and Kent Counties; first and second instars averaged 10 per 10 stems in Sussex County. Feeding injury light in all areas. (Burbutis). MARYLAND - Young larvae feeding on alfalfa in Somerset and Worcester Counties. (U. Md., Ent. Dept.). VIRGINIA - First and second-instar larvae averaged 5-15 per square foot of alfalfa in Botetourt, Roanoke, Montgomery, Bland, Tazewell, and Pulaski Counties. No adults seen. (Isakson). SOUTH CAROLINA - Larvae present in all fields of alfalfa. Damage ranged 30-40 percent. (Thomas). ALABAMA - Larvae severely damaged several isolated plots of Regal white clover at Plant Breeding Station at Tallassee, Elmore County. Ranged light to medium on all other plantings. (Johnson et al.). MISSISSIPPI - Continues to increase on alfalfa in Pontotoc County. Larvae averaged 91 per square foot on untreated alfalfa and 29 per square foot in flamed alfalfa. (Dinkins). ARKANSAS - Larvae active in all areas where infestations known to occur. Light to medium in Marion and Fulton Counties and moderately heavy in Sharp County. (Barnes, Roberts). ILLINOIS - Prepupae noted March 17 in Pope County. Second and third-instar larvae averaged 31 per 100 sweeps of 5-inch alfalfa. (Ill. Ins. Rpt.). COLORADO - Adults active with advent of higher temperatures in Mesa and Delta Counties. Activity noted in Larimer and Weld Counties. Alfalfa showing green growth. (Bulla, Jenkins). NEVADA - Adults active in Lovelock, Pershing County, and Reno, Washoe County. No eggs observed. (Arnett, Bechtel, Horton).

EGYPTIAN ALFALFA WEEVIL (*Hypera brunneipennis*) - ARIZONA - Averaged 400 per sweep on recently cut alfalfa in Yuma County. Application of controls continues. Many Maricopa County fields treated. (Ariz. Coop. Sur.).

CLOVER HEAD WEEVIL (*Hypera meles*) - ALABAMA - Larvae heavy on buds and leaves of crimson clover along highways in Montgomery County. (McQueen).

CLOVER STEM BORER (*Languria mozardi*) - ALABAMA - Adults collected on burclover in Montgomery County. This insect not known to be economic in State. (McQueen).

VARIEGATED CUTWORM (*Peridroma saucia*) - NEW MEXICO - Heavy in spots in alfalfa around Roswell, Chaves County; damaging crowns. (Mathews).

GREEN CLOVERWORM (Plathypena scabra) - ALABAMA - Larvae light to medium on crimson clover, vetch, and burclover as far north as Lee and Montgomery Counties. (McQueen).

ALFALFA CATERPILLAR (Colias eurytheme) - ALABAMA - Larvae light to medium as far north as Lee and Montgomery Counties on crimson clover; adults abundant. (McQueen).

PEA APHID (Acyrthosiphon pisum) - ARIZONA - Building up on newly cut alfalfa in Yuma, Yuma County; few appearing in Phoenix area, Maricopa County. (Ariz. Coop. Sur.). OKLAHOMA - Averaged up to 3,000 per square foot of crown of alfalfa in Tillman County. Moderate in Murray County; light in Marshall, Mayes, and Alfalfa Counties. (Okla. Coop. Sur.). ARKANSAS - Continues to increase in northwest section; winged forms present. Ranged 100-200 per square foot on alfalfa and vetch. Light in alfalfa in Fulton and Marion Counties. (Roberts). VIRGINIA - Apterae very light in 2 to 4-inch alfalfa in Roanoke County. (Isakson). MARYLAND - Light on alfalfa in Somerset and Worcester Counties. (U. Md., Ent. Dept.).

LYGUS BUGS (Lygus spp.) - NEW MEXICO - Adults appearing on alfalfa. (Campbell). UTAH - L. elisus and Lygus spp. active in alfalfa along field margins and roadsides in Salt Lake, Utah, and Juab Counties. (Knowlton).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ALABAMA - Few adults noted on crimson and burclover from Lee and Montgomery Counties southward. (McQueen).

MEADOW SPITTLEBUG (Philaenus spumarius) - NEW JERSEY - Annual survey showed overwintering egg masses increased in numbers compared with 1966. No major problems anticipated in 1967 however. (Ins.-Dis. Newsltr.).

A LEAFHOPPER (Dikraneura carneola) - UTAH - Active along alfalfa field margins in Juab County. (Knowlton).

A MEALYBUG (Rhizoecus kondonis) - CALIFORNIA - Infesting alfalfa in Tyler and Grand Island areas, Sacramento County. Infestations scattered in fields totaling 1,000 acres in areas from Isleton to Sherman Island in the Delta region. Plants stunted and dead in areas several feet in diameter throughout alfalfa acreages. Infested plants first show a typical potassium deficiency symptom, then appear scorched and die. Most noticeable along ditch banks where infestations spread from native weeds. Rotated crops not affected. Infestations heaviest on roots of plants 8 inches to 3 feet high. (Cal. Coop. Rpt.).

CLOVER MITE (Bryobia praetiosa) - UTAH - Active along alfalfa field margins in Juab County. (Knowlton).

POTATOES, TOMATOES, PEPPERS

POTATO APHID (Macrosiphum euphorbiae) - NEW JERSEY - Eggs more abundant than during same time in 1966. Percent of viable eggs averaged 61.1 compared with 33.5 in 1966. (Ins.-Dis. Newsltr.).

COLE CROPS

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Controls necessary in some lettuce fields in the Yuma Valley, Yuma County. (Ariz. Coop. Sur.). ALABAMA - Light in cabbage field near St. Elmo, Mobile County. (Diller, Seibels). FLORIDA - Rapidly increasing on cabbage. Numbers of eggs per plant and larvae on unsprayed plants have doubled and tripled since February. No complaints of poor control received yet at Sanford, Seminole County. (Greene).

IMPORTED CABBAGEWORM (*Pieris rapae*) - ALABAMA - Light in cabbage field near St. Elmo, Mobile County. (Diller, Seibels).

DIAMONDBACK MOTH (*Plutella xylostella*) - ALABAMA - Light in cabbage field near St. Elmo, Mobile County. (Diller, Seibels).

POPLAR PETIOLE GALL APHID (*Pemphigus populitransversus*) - TEXAS - Heavy throughout most untreated cabbage fields in lower Rio Grande Valley. Counts highest on heavier soils along river. Populations have increased during past few years and are becoming a major problem in cabbage production in this area. (Deer, Parker).

GENERAL VEGETABLES

ASPARAGUS BEETLES (*Crioceris* spp.) - NEW JERSEY - Survey in Cumberland, Salem, Gloucester, Atlantic, Camden, and Burlington Counties indicates relatively low carryover. Adults of *C. asparagi* (asparagus beetle) per 100 stalks per field decreased compared with 1966. *C. duodecimpunctata* (spotted asparagus beetle) increased slightly. *C. asparagi* averaged 2.3 per 100 stalks compared with 6.0 in 1966 and *C. duodecimpunctata* averaged 1.3 compared with 1.1 in 1966. (Ins.-Dis. Newsltr.).

A MEALYBUG (*Phenacoccus solani*) - CALIFORNIA - Heavy on stored sweetpotatoes at Ballico, Merced County. Could be transferred to field stock and become widespread if stored sweetpotatoes are used for slips. This is an underground mealybug with wide host range. (Cal. Coop. Rpt.).

THRIPS - NEW MEXICO - Activity increased on onions and lettuce with occurrence of warm weather in Dona Ana County. (Champbell). CALIFORNIA - *Thrips tabaci* ranged 5,000-6,000 per stem on asparagus in Arlington area, Riverside County. Asparagus uninjured. (Cal. Coop. Rpt.).

DECIDUOUS FRUITS AND NUTS

EUROPEAN RED MITE (*Panonychus ulmi*) - NEW JERSEY - Eggs abundant in apple blocks in Burlington County. (Ins.-Dis. Newsltr.).

GREEN PEACH APHID (*Myzus persicae*) - COLORADO - Overwintering eggs light in Mesa County; averaged 6.6 per 100 buds, the lowest in seven years. First nymphs hatched in late February; approximately 60 percent hatched by mid-March. Apricots in full bloom March 20. Dormant sprays applied on peaches, apples, and pears, with an early bloom of all fruits expected. (Bulla).

CITRUS

Citrus Insect Situation in Florida - Mid-March 1967 - CITRUS RUST MITE (*Phyllocoptruta oleivora*) infested 73 percent of groves (norm 56 percent); 58 percent economic (norm 34 percent). Population increased and is now at the highest March level in 16 years of record on both leaves and fruit. It will continue in the high range and may increase further. Four of the 5 districts are in the high range: south, west, central, and north. TEXAS CITRUS MITE (*Eutetranychus banksi*) infested 52 percent of groves (norm 27 percent); 34 percent economic (norm 10 percent). This mite is also at the highest March level on record and will increase into high range. Highest districts are west, north, central, and south. CITRUS RED MITE (*Panonychus citri*) infested 57 percent of groves (norm 37 percent); 25 percent economic (norm 14 percent). Population is above the average of recent years. Increase is expected in scattered areas and about 10 percent of groves will have heavy infestations. Highest districts are west, north, and central. SIX-SPOTTED MITE (*Eotetranychus sexmaculatus*) is abnormally scarce and of little threat. GLOVER SCALE (*Lepidosaphes gloverii*) infested 34 percent of groves; 20 percent economic. Population is above average and in the high range; little change is expected. Highest districts are east, south, and central. PURPLE SCALE (L. beckii) infested 80 percent of groves; 10 percent economic. Population is near normal and moderate, with slight decrease expected. YELLOW SCALE (Aonidiella citrina) infested 72 percent of groves; 8 percent economic. Population is near normal and in moderate range but lower than last March. No change is expected. Highest districts are central and east. CHAFF SCALE (Parlatoria pergandii) infested 59 percent of groves; 5 percent economic. Population is below normal and will remain low or moderate in all districts. BLACK SCALE (Saissetia oleae) infested 35 percent of groves; 12 percent economic. Population is above normal but will remain in the low range in most districts. WHITEFLIES are slightly above normal numbers. Adult forms will become abundant. MEALYBUGS are expected to remain at normal low level until early May. APHIDS will increase rapidly during the coming month and peak early in April. Overall abundance is not expected to exceed the normal. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred).

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Appearing in a few orchards in Maricopa County; prevalent in Yuma area, Yuma County. Controls being applied in some groves in Maricopa and Yuma Counties. (Ariz. Coop. Sur.).

ONION THRIPS (Thrips tabaci) - CALIFORNIA - Seriously damaging ripening grapefruit in Arlington, Riverside County; migrating from adjacent asparagus field. Navel and Valencia orange groves nearby unaffected. (Cal. Coop. Rpt.).

SMALL FRUITS

STRAWBERRY SPIDER MITE (Tetranychus atlanticus) - MARYLAND - Light but active on strawberries near Salisbury, Wicomico County. (U. Md., Ent. Dept.).

ORNAMENTALS

APHIDS - NEW MEXICO - Honeydew of Cinara tujafilina present on most arborvitae throughout State. (N. M. Coop. Rpt.). OKLAHOMA - C. tujafilina heavy on arborvitae in Greer County; light to moderate in Cleveland County. (Okla. Coop. Sur.). ALABAMA - Macrosiphum rosae heavy on many roses and Aphis spiraecola heavy on new growth of spirea in central and southern areas. (McQueen).

ARMORED SCALES - CALIFORNIA - Aonidiella aurantii medium on sago-palm nursery stock at Vista, San Diego County. (Cal. Coop. Rpt.). MARYLAND - Pseudaulacaspis pentagona heavy on lilac at Dundalk, Baltimore County. (U. Md., Ent. Dept.).

BULB SCALE MITE (Steneotarsonemus laticeps) - ALABAMA - Infesting bulbs and destroying flower buds in greenhouse in Montgomery County. Controls unsatisfactory. (Griffith).

FOREST AND SHADE TREES

EASTERN TENT CATERPILLAR (Malacosma americanum) - OKLAHOMA - Eggs hatched on wild plum in Payne and Major Counties. (Okla. Coop. Sur.). ARKANSAS - Webs noted March 14, one of earliest hatching dates for Washington County. Small webs also noted in Little River, Sevier, and other southern counties. Infestations unusually light. (Warren). MISSISSIPPI - Small webs on shade trees in Noxubee County. (Dinkins). ALABAMA - Heavy in Butler County; appearing as far north as Lee County. (Seibels et al.).

FOREST TENT CATERPILLAR (Malacosoma disstria) - MISSISSIPPI - Larvae hatched on March 15 in Washington County. (Dinkins).

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) - ARKANSAS - Heavy adult emergence observed in southwest area March 7-14. Exceptionally warm weather accelerated normal pattern of emergence. (Warren).

A LEAF BLOTCH MINER (*Lithocolletis arbutusella*) - CALIFORNIA - Heavy in 10-mile area of madrone trees in Mendocino County. (Hunt).

PALES WEEVIL (*Hylobius pales*) - ALABAMA - This weevil, *Ips calligraphus*, and *Glyptoscelis pubescens* (a leaf beetle) infested pine seedlings at State nursery in Escambia County. (Goggans, Leeper).

ELM LEAF BEETLE (*Pyrrhalta luteola*) - ARIZONA - Appearing on some elms in Collidge, Pinal County. (Ariz. Coop. Sur.).

A LONG-HORNED BEETLE (*Neoclytus conjunctus*) - CALIFORNIA - All stages heavy on white oak in Valley Springs, San Diego County. (Cal. Coop. Rpt.).

MEALYBUGS - CALIFONRIA - *Spilococcus juniperi* light to heavy on native juniper in Highlands and East Highlands, San Bernardino County. *Pseudococcus sparsus* infesting same host locally in East Highlands. *P. sparsus* is a new State record. (Cal. Coop. Rpt.).

A SOFT SCALE (*Coccus elongatus*) - CALIFORNIA - Adults heavy on street planting of chestnut trees in San Diego, San Diego County. (Cal. Coop. Rpt.).

PINE NEEDLE SCALE (*Phenacaspis pinifoliae*) - MARYLAND - Conspicuous on Norway spruce at Rocks, Harford County. (U. Md., Ent. Dept.).

A PSYLLID (*Psylla uncatoides*) - CALIFORNIA - Numphs and adults heavy on acacia trees in San Diego, San Diego County. (Cal. Coop. Rpt.).

A CONIFER SAWFLY (*Neodiprion taedae linearis*) - ARKANSAS - Unseasonably warm weather shortened hatching period in Calhoun County. Hatch began March 14; nearly complete by March 16. (Warren).

STORED PRODUCTS

DERMESTID BEETLES (*Trogoderma* spp.). - CALIFORNIA - *T. parabile*, *T. simplex*, *T. inclusum*, and *T. sternale* common in powdered, dried milk locally in Riverside and San Bernardino Counties. (Cal. Coop. Rpt.).

BENEFICIAL INSECTS

LADY BEETLES - ALABAMA - Adults and larvae of *Cycloneda sanguinea*, *Hippodamia convergens*, and *Coleomegilla maculata fuscilabris* abundant in vetch, crimson clover and burclover in Montgomery County where aphid populations are heavy. *Adalia bipunctata* adults numerous on spirea in Lee County. (McQueen). ARKANSAS - Light numbers of *H. convergens* active on legumes in northwest area. (Ark. Ins. Sur.). NEW MEXICO - Lady beetles observed on mustard weeds in an onion field. (Campbell).

A PREDACEOUS OSTOMID BEETLE (*Temnochila virescens*) - ALABAMA - Adults plentiful under pine bark of dead trees, feeding on larvae of other insects. Single adult included in large collection of pine insects from pine seedlings at Atmore State Nursery. Det. by L. L. Hyche. (Goggans, Leeper).

DAMSEL BUGS (*Nabis* spp.) - ARKANSAS - Activity increasing on small grains and legumes in northwest area. (Ark. Ins. Sur.).

A BIG-EYED BUG (*Geocoris punctipes*) - ALABAMA - Adults heavy in Montgomery County clover where heavy populations of injurious insects have become established. (McQueen).

HYMENOPTEROUS PARASITES - ARKANSAS - Activity increasing in northwest area. (Ark. Ins. Sur.).

MAN AND ANIMALS

MOSQUITOES - UTAH - Second to fourth-instar larvae of *Aedes increpitus* ranged up to 30 per dip in Weber County; control underway. Second-instar *A. dorsalis* larvae collected in Hot Springs area. Up to 200 first-instar mosquito larvae per dip in Huntsville area. These are unusually early records. (Fronk, Knowlton). LOUISIANA - Larval collections in Jefferson Parish contained *Aedes vexans*, *Anopheles crucians*, *A. quadrimaculatus*, *Culex restuans*, and *C. salinarius*. Adult activity continues low throughout parish. Some floodwater species increased along Lake Pontchartrain levee. (Stokes).

CATTLE GRUBS (*Hypoderma* spp.) - SOUTH DAKOTA - Populations at same levels as last year on young stock from Cottonwood, Jackson County, and Newell, Butte County. Will be at peak emergence within next 3 weeks; 75-100 percent of untreated calves infested with 8 grubs per head. Yearlings averaged 5 grubs each; 2-year-olds fewer. (Jones). KANSAS - Survey conducted in 30 counties during February. Infestations ranged from 1 animal infested with 1 grub in Smith and Mitchell Counties to 43 grubs per animal in Russell County. The averages ranged as follows by district: Northeast 2.0-4.3, east-central 2.5-9.2, southeast 2.5-4.6, north-central 1.0-1.6, central 3.2-9.5, south-central 4.0-6.4, northwest 3.1-6.6, west-central 3.5-4.1, and southwest 3.2-7.6. (Simpson).

SCREW-WORM (*Cochliomyia hominivorax*) - No cases reported in U. S. March 19-25. Total of 75 cases reported in portion of Barrier Zone in Republic of Mexico March 12-18 as follows: Baja California 1, Territorio sur de Baja California 29, Sonora 33, Chihuahua 6, Tamaulipas 6. One case reported in Mexico south of the Barrier Zone. Barrier Zone is area where eradication operations are underway to prevent establishment of self-sustaining population in U. S. Sterile screw-worm flies released March 19-25: Texas 8,808,000, Mexico 115,056,000. (Anim. Health Div.).

HORN FLY (*Haematobia irritans*) - MISSISSIPPI - Approximately 50-75 flies per head observed on 100 beef cattle in Lowndes County. (Dinkins). ALABAMA - First adults of season observed on cattle herds in Bibb County March 18 and 19. (Odom). OKLAHOMA - Ranged up to 25 per head (average 5) on cattle in Cherokee and Muskogee Counties; light in Garvin County. (Okla. Coop. Sur.).

CATTLE LICE - ILLINOIS - Remain numerous especially on beef herds. Infestations economic on 10-20 percent of beef herds during past winter. (Ill. Ins. Rpt.). IOWA - *Bovicola bovis* and *Haematopinus eurysternus* adults light, less than 5 per examination area, on animals in Polk, Dallas, Story, and Marion Counties. *Linognathus vituli* and *Solenopotes capillatus* not found on these animals. (Iowa. Ins. Sur.). OKLAHOMA - *H. eurysternus* continues moderate on cattle in Mayes, Ottawa, Choctaw, and Garvin Counties. (Okla. Coop. Sur.).

LONE STAR TICK (*Amblyomma americanum*) - OKLAHOMA - Ranged 300-400 nymphs and 300-400 adults per head on cattle in Muskogee and Cherokee Counties. Moderate on cattle in Choctaw County. (Okla. Coop. Sur.). ARKANSAS - Ticks, primarily this species, heavy on cattle in north-central area. (Barnes).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CITRUS WHITEFLY (*Dialeurodes citri*) - CALIFORNIA - Infestation discovered at Bakersfield, Kern County. Delimiting survey in progress. This is first find in Kern County since period of 1938-1941, and is 100 miles south of the Fresno infestation. (Harper, Feb. 28).

IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) - SOUTH CAROLINA - Infestation more widespread in Jasper County; 100 mounds found on 1 mile of roadside between Tillman and Hardeville. Mounds more numerous in fields and pastures. Unless concentrated control measures undertaken, these ants will be serious problem for farmers this summer. (Nettles el al.).

KHAPRA BEETLE (*Trogoderma granarium*) - Inspections in Arizona, California, and New Mexico negative during February. (PPC West. Reg.).

MORMON CRICKET (*Anabrus simplex*) - NEVADA - Scouting in areas of Elko, Lander, and Eureka Counties showed no evidence of hatching. (PPC West. Reg., Feb. Rpt.).

PINK BOLLWORM (*Pectinophora gossypiella*) - CALIFORNIA - Examinations of cotton debris and sex-lure traps negative during February. (PPC West. Reg.).

INSECT DETECTION

New State Records

A LEAF ROLLER MOTH (*Argyrotaenia alisellana*) - DELAWARE - Adult collected in blacklight trap at Dover, Kent County, June 22, 1966, by J. Franklin. Det. by R. W. Hodges. New State record. (Burbutis).

A MEALYBUG (*Pseudococcus sparsus*) - CALIFORNIA - Collected on native juniper at East Highlands, San Bernardino County. (p. 223).

CORRECTIONS

CEIR 17(11):179 - Under New County Records. AN ERIOCOCCID SCALE (Dactylopius confusus) should read A DACTYLOPIID SCALE.

CEIR 17(12):197 - GREENBUG (Schizaphis gramium) should read (Schizaphis graminum).

CEIR 17(12):201 - MOSQUITOES - LOUISIANA - Culex restauans should read Culex restuans.

CEIR 17(12):203 - New State Records - AN ANT (*Solenopsis* (*Diplorhoptrum*) sp.) - HAWAII - Should read: This subgenus collected in upper Manoa Valley, Oahu, September 25, 1966. Det. by D. R. Smith. (p. 214).

CEIR 17(12):208 - Paragraph 4, line 2 from bottom: BEAN THRIPS (Calirothirps fasciatus) should read (Caliothrips fasciatus).

Light Trap Collections

FLORIDA - Gainesville - 3/22, BL - Granulate cutworm (*Feltia subterranea*) 2. Sanford - 3/8, BL - Black cutworm (*Agrotis ipsilon*) 10, granulate cutworm 19, yellow-striped armyworm (*Prodenia ornithogalli*) 8, cabbage looper (*Trichoplusia ni*) 5. Sanford - 3/14-16, BL - Black cutworm 19, granulate cutworm 24, tobacco budworm (*Heliothis virescens*) 1, corn earworm (*H. zea*) 1, yellow-striped armyworm 5, cabbage looper 26.

SOUTH CAROLINA - Charleston - 3/20-26, BL, temp. 39-86°, precip. 0.19 - Black cutworm 1, granulate cutworm 6, armyworm (*Pseudaletia unipuncta*) 2.

TEXAS - Brownsville - 3/18-24, 2 BL, temp. 62-83°, precip. 0.44 - Black cutworm 9, salt-marsh caterpillar (*Estigmene acrea*) 2, granulate cutworm 33, tobacco budworm 4, corn earworm 71, variegated cutworm 4, yellow-striped armyworm 9, armyworm 29, beet armyworm (*Spodoptera exigua*) 1, cabbage looper 21. Waco - 3/18-24, BL - Black cutworm 1, salt-marsh caterpillar 3, granulate cutworm 8, corn earworm 4, variegated cutworm 7, yellow-striped armyworm 12, armyworm 5.

HAWAII INSECT REPORT

Vegetables - All stages of DIAMONDBACK MOTH (Plutella xylostella) medium to heavy on broccoli and cabbage seedlings in Wailua, Kauai; many leaves with 2-5 pupae. (Au). All stages of CABBAGE WEBWORM (Hellula rogatalis) heavy on Chinese cabbage in Kalaheo, Kauai; mature cabbages heavily damaged. (Fujimoto). GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) and a LEAF MINER FLY (Liriomyza sp.) heavy in tomato and snap bean fields in Waianae, Oahu. (Yamamoto).

Fruits and Nuts - SPOTTED GARDEN SLUG (Limax maximus) caused heavy damage to mature strawberry fruits in backyard plantings at Makawao, Maui. (Miyahira). COCONUT LEAF ROLLER (Hedylepta blackburni) caused moderate to heavy damage to coconut trees in Olowalu, Maui; only few larvae on leaves, most had pupated. (Miyahira).

General Pests - SOUTHERN GREEN STINK BUG (Nezara viridula) increased in areas on Oahu, Kauai, and Hawaii Islands. On Oahu, nymphs medium on tomatoes in Waianae; on Kauai, nymphs and adults built up on cowpea, morning-glory, and other plants in Lihue; and on Hawaii Island, nymphs heavy on castor bean and popolo (Solanum nigrum) in Keauhou. Population generally light throughout Maui. (Yamamoto et al.).

Ornamentals - On Maui, infestations of ROSE APHID (Macrosiphum rosae) medium on backyard rose plantings in Kahului and light on roses in Makawao. (Ah, Sam). All stages of an ARMORED SCALE (Chrysomphalus sp.) heavy on stems and leaves of slipper flower in Likue, Kauai; more than 300 adults on some leaves. (Funasaki).

Man and Animals - Total of 953 Aedes vexans nocturnus and 3,483 Culex pipiens quinquefasciatus taken in 47 light traps operated by Mosquito Control Branch, Department of Health, on Oahu during February. Aedes spp. counts remained generally low in all areas. A total of 1,452 Culex spp. collected in Nanakuli; very high compared with other areas. (Haw. Ins. Rpt.).

Miscellaneous Pests - GIANT AFRICAN SNAIL (Achatina fulica) - Heavy activity, due to heavy rains, reported in residential areas of Kaneohe, Kahuku, and the Hawaii-Kai areas of Honolulu, Oahu. On Maui, heavy activity reported from Hana, Waikapu, and Paia. (Nakao, Funasaki, Miyahira).

WEATHER OF THE WEEK ENDING MARCH 27

HIGHLIGHTS: Moderate to locally heavy showers or snows fell over most of the eastern half of the Nation. It was a warm or very warm week, except in the Northeast.

PRECIPITATION: A storm centered over the Corn Belt early in the week produced precipitation from midcountry to the Atlantic coast. Several inches of snow fell in the extreme North, while 2-22 inches accumulated from Maryland to New England. South of the snow line rain showers fell. Amounts were generally less than 0.5 inch, except in parts of Illinois and Indiana, where more than 1 inch was recorded. Scattered thundershowers, mostly late in the week, dampened portions of the parched central Plains, providing only slight relief from a long period of dryness. Parts of Texas and Oklahoma received over an inch and a few places in Kansas more than 2 inches, but on Thursday and Friday southerly winds raised great clouds of dust from Kansas to the Dakotas. Light rain fell along the northern Pacific coast during the week, with snow inland and over the mountains.

TEMPERATURE: Average temperatures in the Northeast and the Middle Atlantic States were below normal for the second week. Nightly freezes occurred in the Northeast. In contrast, southerly winds brought increasing warmth to the central and northern Great Plains, with Omaha, Nebraska, registering 89° on Friday. Glasgow, Montana, averaged 34° warmer than the previous week, while the Great Plains averaged 8° to 14° warmer than normal. (Summary supplied by Environmental Data Service, ESSA).

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1966

(continued from page 214)

DECIDUOUS FRUITS AND NUTS

Highlights:

CODLING MOTH emerged heavy in Oregon and was troublesome in California, New Mexico, Texas, Kansas, and Illinois. ORIENTAL FRUIT MOTH damaged peaches in several States and HICKORY SHUCKWORM was serious on pecans in the South. PEACH TREE BORER and LESSER PEACH TREE BORER were severe pests of stone fruits. GREEN JUNE BEETLE adults damaged fruits in Arkansas and Oklahoma. APHID populations were heavy on apples in some areas and BLACK PECAN APHID was very damaging to pecans in Texas. EUROPEAN RED MITE was the most troublesome pest for fruit growers in Michigan and Virginia. SPIDER MITES were serious in Missouri, Illinois, Indiana, and eastern Virginia.

CODLING MOTH (*Carpocapsa pomonella*) was not as abundant in the Bozeman and western areas of MONTANA as in 1965. Because of improper timing of sprays, damage to apples increased during 1966 in WASHINGTON. In OREGON, adults emerged in record numbers in Jackson County during May, but damage only occurred in unsprayed orchards. Codling moth was very damaging to apples, pears, and walnuts throughout CALIFORNIA. Codling moth was abundant on apples in all areas of COLORADO, but numbers varied from orchard to orchard. In light population areas, many growers timed sprays according to the moth catches in light traps, and were able to reduce the number of sprays needed. This pest was serious on improperly treated pear and apple orchards throughout NEW MEXICO, and reduced apple quality in the Hondo and Espanola Valleys. It was also a major pest of apples in TEXAS. Emerging later than usual in northeast KANSAS, condling moth infested 90 percent of the unsprayed apples in the south-central areas by mid-July. Injury was negligible in well sprayed orchards. This pest was almost nonexistent in sprayed MISSOURI orchards, but almost continuous broods occurred on unsprayed apples until hot weather in mid-July. Very few third-brood larvae were found in mid-October. Most ILLINOIS growers maintained excellent control; but where weather made early spraying difficult and growers neglected the second brood, populations quickly built up to damaging proportions.

Codling moth populations in WISCONSIN were low all season. Moths were detected in blacklight traps by June, second-generation larvae were observed by July, and second-generation moths were evident by late August. General emergence was underway during the middle of June in Kent County, MICHIGAN. Sprays were effective, but late season activity of second-brood adults resulted in late September larval injury of apples in some southwest Michigan and Kent County orchards. Remaining one of the major apple pests in INDIANA, codling moth damaged commercial apples very little, however. Peak emergence of overwintered adults in OHIO occurred during early June. Injury to apples became apparent along with almost fully developed, first-generation larvae by late June and early July. First-generation adults emerged in increasing numbers until the beginning of August. Damage was abnormal because of fruit loss from frost in most of the southern half of Ohio. Where spray programs had been partially or completely abandoned, codling moth infested nearly all of the crop. Also, because of curtailed control programs, more injury than usual occurred in VIRGINIA. Codling moth was medium on an abandoned apple orchard early in the season at Hancock, MARYLAND. Possibly due to parasites, the second brood was generally light. Populations were very light in well managed apple orchards and typically abundant in backyard apple plantings in NEW JERSEY. Codling moth infested unsprayed CONNECTICUT orchards and damaged fruit in unsprayed VERMONT trees. Bait-trap collections in MAINE indicated an above average number of second-brood adults.

ORIENTAL FRUIT MOTH (Grapholitha molesta) was a serious pest of peaches in the central valley and northward in CALIFORNIA. Larvae emerged during late May in south-central KANSAS. Infested twigs could be readily found in Doniphan County by early June. Peaches that had not been frozen were 100 percent infested. Oriental fruit moth was variable on peaches in southeast MISSOURI. Infestations were directly proportional to control practices; in general, economic damage to fruit was low but injury to terminals was widespread. Infestations were well controlled in ILLINOIS. Oriental fruit moth was not a problem on peaches in southwestern INDIANA where routine sprays were applied. Where a spray program was neglected due to loss of crop during the May freeze, some flagging of terminal branches was apparent. Populations increased in poorly sprayed orchards in PENNSYLVANIA. Oriental fruit moth was not serious in RHODE ISLAND, but reached its greatest abundance since 1961 in CONNECTICUT, although infestations were not serious. Populations were light in well managed peach orchards in NEW JERSEY. Larvae heavily damaged terminal buds in an unsprayed peach orchard in Washington County, MARYLAND. Populations were highest on peaches since the initiation of organic insecticides for control in VIRGINIA. Injury was severe in young orchards and moderate on late maturing fruits.

EYE-SPOTTED BUD MOTH (Spilonota ocellana) populations were normal in CONNECTICUT and were not economic in sprayed orchards. GRAPE BERRY MOTH (Paralobesia viteana) continued at a low level in PENNSYLVANIA. FILBERTWORM (Melissopus latiferreanus) was normal in filberts in the Willamette Valley of OREGON. Adults emerged June 21 in Douglas County and June 26 in Lane County. Peaches were infested in Washington County, where infestation was 75 percent in an early variety in one orchard. HICKORY SHUCKWORM (Laspeyresia caryana) caused usual damage to pecan production in TEXAS. Hickory shuckworm damage to pecans was common in OKLAHOMA. Larvae infested pecans throughout ALABAMA, with serious losses resulting.

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) caused little injury to apples in northeast KANSAS. No infestations were found in the south-central area. Red-banded leaf roller and FRUIT-TREE LEAF ROLLER (Archips argyrospilus) were all but absent this year in MISSOURI. Populations increased slightly to about 2 damaged fruits per 1,000 apples in ILLINOIS. Red-banded leaf roller was observed on peaches in PENNSYLVANIA, but was no problem on apples. Infestations continued very light on apples in MARYLAND. Populations were very light on well managed apple orchards in NEW JERSEY, while a smaller decrease than previous 2 or 3 years was observed in CONNECTICUT. Red-banded leaf roller was active in MAINE. Fruit-tree leaf roller increased in sprayed and unsprayed orchards in Connecticut. Populations were very light in NEW JERSEY while populations remained low in ILLINOIS. Fruit-tree leaf roller infested many species of deciduous trees as well as Russian-olive, chokecherry, and plum in MONTANA. A LEAF ROLLER MOTH (Platynota stultana) infested prunes at a few locations in CALIFORNIA, but has not been a pest of prunes in State previous to 1966.

PEACH TREE BORER (Sanninoidea exitiosa) was a major pest of plums in TEXAS. A survey of 8 orchards in Johnson County, ARKANSAS, during February indicated 32.5 percent of trees infested with peach tree borer. This species and LESSER PEACH TREE BORER (Synanthedon pictipes) were the most destructive pests of peach, plum, and cherry trees throughout ALABAMA. In VIRGINIA, peach tree borer populations were higher than normal, with considerable damage to trees in some orchards. Loss of young trees was 50 percent in one Nelson County orchard. Peach tree borer killed many young peach trees in a Carroll County orchard, MARYLAND. Peach tree borer was a problem in several young plantings in NEW JERSEY where peach growers failed to practice preplanting root-dip controls. WESTERN PEACH TREE BORER (Sanninoidea exitiosa graefi) caused heavy damage to peach in Siskiyou and San Luis Obispo Counties, CALIFORNIA. Lesser peach tree borer damage increased in KANSAS. This species continued to be a major pest of peaches in southwestern INDIANA. Damage contributed to premature decline and removal of peach trees injured by winter freezing, crotch splitting, and pruning. In Knox County, the first male of the season was collected May 3. Peak emergence occurred from June 20 to July 10 and from August 15 to September 4. Lesser peach tree borer continued as one of the most severe pests of stone fruits in MICHIGAN. Widespread emergence of adults was underway in all fruit areas by mid-June and continued at a high level during July. Infestations were low in VIRGINIA, probably due to the revised spray program which gave better control.

A GEOMETRID MOTH (Operophtera occidentalis) was abundant on leaves of cherry, plum, pear, and apple in Multnomah County, OREGON, during April and May. UNSPOTTED TENTIFORM LEAF MINER (Callisto geminatella) was low in a single orchard in central MISSOURI and severe in an orchard at East Lyme, CONNECTICUT. A CHERRY LEAF MINER (Nepticula slingerlandella) infested cherry foliage in Van Buren and Oceana Counties, MICHIGAN, and adults emerged in Van Buren County on May 25. LEOPARD MOTH (Zeuzera pyrina) caused considerable damage to apple orchards at Barrington, RHODE ISLAND. Unspecified CUTWORMS caused heavy damage to apple trees in several isolated locations in VERMONT. EASTERN TENT CATERPILLAR (Malacosoma americanum) populations were below average levels in CONNECTICUT, but larvae damaged fruit trees during April in OKLAHOMA. UNICORN CATERPILLAR (Schizura unicornis) defoliated apple trees in Ellis County, KANSAS, in October. RED-HUMPED CATERPILLAR (Schizura concinna) was more prevalent on walnuts in northern CALIFORNIA. WALNUT CATERPILLAR (Datana integerrima) damaged pecan trees from late June to mid-October in OKLAHOMA. FALL WEBWORM (Hyphantria cunea) leaf damage on walnuts and apples was much less in OREGON than in 1965. Webs averaged less than one per walnut tree. Populations were heavy on walnuts in San Luis Obispo County, CALIFORNIA. Fall webworm nests were observed in some KANSAS pecan groves during July, but controls kept damage at low levels. Larvae damaged pecan trees from late June to mid-October in OKLAHOMA.

PECAN NUT CASEBEARER (Acrobasis caryae) was present in large numbers in KANSAS, and caused premature nut drop in some southeastern pecan groves. Damage was moderate to heavy in most of the pecan-producing areas of OKLAHOMA during the summer. Second-generation egg laying began in late July with moderate to heavy damage occurring in a few areas during August. Infestations continued to expand in Carlsbad and adjacent areas in Eddy County, NEW MEXICO, during the summer. Chemical control was fair to good, depending on the material used and the timing of applications. Populations appeared heavier in pecans during the first and second generations, and accounted for considerable losses in central and southern ALABAMA. A PYRALID MOTH (Acrobasis tricolorella) continued as a major problem for cherry growers in north-northwest Lower MICHIGAN, where, by June 3, over 90 percent of the larval population had dropped to the ground for pupation. The summer brood of larvae completed development and started spinning hibernaculae during mid-July.

PLUM CURCULIO (Conotrachelus nenuphar) infested peaches in Labette County, KANSAS. Plum curculio caused considerable "catfacing" of peaches and some scarring of apples in MISSOURI. Populations were controlled in both peach and apple orchards in ILLINOIS, but most apple orchards had a small amount of damage. This species was a minor problem along the edges of commercial apple orchards adjoining woodlots in INDIANA. Fully developed larvae emerged from dropped plums in east-central OHIO during late June and adults appeared in mid-July through August. On June 23, 7 percent of the plums in a Wayne County orchard showed feeding and oviposition scars. Plum curculio was of minor importance on apples in PENNSYLVANIA. In VERMONT, larvae damaged fruit in unsprayed trees. Populations were observed in MAINE, but no control difficulties were encountered. Plum curculio was common on unsprayed apples during June in RHODE ISLAND, but well controlled in commercial orchards. This pest was a problem in many commercial orchards and backyard plantings in CONNECTICUT because of the extended emergence period. Populations were very light in well managed apple and peach orchards in NEW JERSEY. Weather was unfavorable for plum curculio oviposition during April and May in VIRGINIA, resulting in a small second generation. Commercial orchards showed no losses. Plum curculio was the most serious pest of peaches, plum, and apples throughout ALABAMA.

PECAN WEEVIL (Curculio caryae) emergence began in north-central OKLAHOMA during early August; heavy infestations were present in many areas during the fall and damage continued until mid-November. Populations remained noneconomic during 1966 in KANSAS. A WEEVIL (Brachyrhinus cribricollis) damaged apricots in San Benito County, CALIFORNIA.

GREEN JUNE BEETLE (Cotinis nitida) adults damaged ripened fruit in northwestern ARKANSAS. The basic cause appears to be the result of increased use of poultry litter on pastures which is favorable for larval development. Green June beetle damaged ripening fruit in many areas of OKLAHOMA during late July and August. PACIFIC FLATHEADED BORER (Chrysobothris mali) damaged apples and walnuts in Tuolumne and El Dorado Counties, CALIFORNIA. SHOT-HOLE BORER (Scolytus rugulosus) was very prevalent in deciduous fruits in several locations in California. A FALSE POWDER-POST BEETLE (Melalgus confertus) damaged limbs of fruit trees in Douglas County, OREGON, during May and June.

APPLE APHID (Aphis pomi) appeared early and infested numerous backyard plantings in MONTANA. Populations were high in northeast KANSAS in June where no controls were applied. Parasites and predators kept numbers below economic levels after June. Apple leaf curling was reported from May to mid-June in OHIO and was particularly high in some sections, causing badly distroted foliage in more severe infestations. Apple aphid was troublesome during midseason in VIRGINIA because growers were less vigilant in their control. Apple aphid was not serious, but was very high in some unsprayed orchards in CONNECTICUT. Populations were below average in most areas of MAINE.

ROSY APPLE APHID (Dysaphis plantaginea) was high in northeast KANSAS in June where no controls were applied. Parasite and predator populations kept numbers below economic levels after June. Rosy apple aphid was particularly high on apple foliage over some sections of OHIO, and active from early May through June. Infestations were adequately controlled in VIRGINIA, except where control measures were applied after some damage had occurred. Populations were light and considerably below normal on apples in Washington County, MARYLAND, while in CONNECTICUT populations were very high in some unsprayed orchards.

WOOLLY APPLE APHID (Eriosoma lanigerum) was a major apple pest in ALABAMA and less noticeable than in 1965 in KANSAS. APPLE GRAIN APHID (Rhopalosiphum fitchii) first-instar nymphs were observed on Prunus sp. during April in southern WISCONSIN. Fundatrices began reproducing two weeks later. A buildup was noted on Prunus sp. early in October. Apple grain aphid built up to 50 aphids per apple bud during April and declined in May in OHIO. Predatory syrphid fly larvae and eggs were associated with most aphid colonies. GREEN PEACH APHID (Myzus persicae) was heavy on peach and plum in June, causing severe leaf curl in northwest NEVADA. High populations of unspecified APHIDS on nut trees were common in UTAH, but less general and troublesome than 1965. Aphids caused no serious problems on apples where spray programs were followed, but were moderate on unsprayed apple trees in RHODE ISLAND.

BLACK PECAN APHID (Myzocallis caryaefoliae) killed several peach trees in each of two young plantings in NEW JERSEY. Black pecan aphid and several species of yellow aphids were serious pests of pecans in central and southern ALABAMA. In TEXAS, the heaviest infestation of black pecan aphid in several years occurred throughout the pecan-producing areas. In spite of a late peak population, considerable defoliation occurred, potentially threatening 1967 pecan production. This species and BLACK-MARGINED APHID (Monellia costalis) were light to heavy on pecan trees in the Pecos and Mesilla Valleys, NEW MEXICO. Black-margined aphid damaged pecan trees in Fresno and Shasta Counties, CALIFORNIA. FILBERT APHID (Myzocallis coryli) was high during early summer in OREGON, but declined rapidly due to high temperatures.

PEAR PSYLLA (Psylla pyricola) damaged pears in northern CALIFORNIA and in OREGON. Much fruit in Jackson County, Oregon, was downgraded because of damage, but late-picked Bartletts escaped damage. Surveys indicated unusually large overwintering populations. Area-wide control programs were more than 94 percent effective in reducing pear psylla populations in over 14,000 acres of pears in central WASHINGTON. Pear psylla appeared to be building up in RHODE ISLAND. WHITE APPLE LEAFHOPPER (Typhlocyba pomaria) adults and nymphs caused considerable leaf chlorosis on apples in Berrien and Kent Counties, MICHIGAN, during September. EUROPEAN FRUIT LECANIUM (Lecanium corni) infestations were high in a single orchard in VIRGINIA. In CALIFORNIA, some infestations occurred on deciduous fruits in northern counties.

SAN JOSE SCALE (Aspidiotus perniciosus) increased in cherry orchards at Wenatchee, WASHINGTON, where cherry fruit fly programs were not in use and also increased on apples. San Jose scale was heavier this year than past years on deciduous fruits and almonds in CALIFORNIA, and continued as the most important scale insect affecting peach, apple, plum, and pear in ALABAMA. This species was a common pest of pear, plum, and peach trees in the northern half of FLORIDA. WHITE PEACH SCALE (Pseudaulacaspis pentagona) was a serious pest of peach trees in Florida, and light to moderate in several orchards in VIRGINIA. An ARMORED SCALE (Hemiberlesia lataniae) infested cherries in San Luis Obispo County, CALIFORNIA. OLIVE SCALE (Parlatoria oleae) infested deciduous fruits in the San Joaquin Valley of California. OYSTERSHELL SCALE (Lepidosaphes ulmi) eggs began hatching May 19 at Madison, WISCONSIN, with crawlers active on twigs and undersides of leaves a week later. Damage to fruit and twigs of apple trees was noted during August in Fond du Lac County on untreated trees.

APPLE MAGGOT (Rhagoletis pomonella) extended its range much farther south in ILLINOIS than for several years. Infested apples were found in Brown, Champaign, and Coles Counties. Populations became high in August and controls were necessary. Adults began appearing during July in WISCONSIN after heavy rains. After rains in August, adults became very numerous and control was recommended. Populations remained high for 3 weeks, before decreasing for the remainder of the season. In MICHIGAN, apple maggot adults were first collected July 1 in Van Buren and Kalamazoo Counties and general emergence followed in other fruit areas. Adult populations varied according to area and host trees with some flies reported as late as mid-September in some southwest areas. Well timed sprays obtained good control of larvae. Adults were observed on July 24 in an unsprayed orchard near Vincennes, INDIANA, but none were reported in commercially grown fruit. In general, this insect was more abundant in the northern half of Indiana than for several years. Apple maggot was typically abundant in backyard apple plantings in NEW JERSEY. This pest was a problem in some commercial orchards in CONNECTICUT because of increased abundance and extended emergence period. Populations were very heavy in home plantings. Populations were normal in RHODE ISLAND, being controlled in commercial orchards, but were a problem in home gardens. Apple maggot adults were abundant in untreated orchards in VERMONT. Adult emergence began July 5 in the Monmouth area of MAINE. Emergence peaked July 19 and was complete by August 13.

WALNUT HUSK FLY (Rhagoletis completa) was widespread and damaging to walnuts and infested peaches in a few locations in CALIFORNIA. Surveys for walnut husk fly remained negative in the Willamette Valley of OREGON; however, backyard trees in Jackson County were 100 percent infested. Walnut husk fly was recorded for the first time in Benton and Clark Counties, WASHINGTON. CHERRY FRUIT FLY (R. cingulata) adults emerged May 9 in Wasco County and May 19 in Marion County, OREGON. Populations were heavier than in 1965 and very heavy in poorly sprayed or unsprayed orchards in PENNSYLVANIA. In MONTANA, BLACK CHERRY FRUIT FLY (R. fausta) infested few treated cherries, but untreated cherries in the Flathead Lake area were heavily infested. Adults emerged in mid-June in Kent, Manistee, and Benzie Counties, MICHIGAN.

PEAR SAWFLY (Hoplocampa brevis) survey was conducted with yellow sticky board traps in WISCONSIN pear plantings; however; none were detected. Pear sawfly was reported in several areas in CONNECTICUT. An adult collected in Providence on May 3, 1966, was the first specimen of this sawfly found in RHODE ISLAND. Additional adults were collected on sticky boards on the same and an adjoining property during May. Larvae were collected in Johnston during June. EUROPEAN APPLE SAWFLY (Hoplocampa testudinea) was high in commercial orchards in CONNECTICUT, where damage may have been confused with that of pear sawfly. First adults were observed May 18. Adults of 2 sawfly species, not H. brevis, were collected on sticky boards in pears at Kingston, Rhode Island, in late May. PEAR-SLUG (Caliroa cerasi) fed heavily on cherry at Warren, Rhode Island, during early September. CALIFORNIA PEAR-SLUG (Pristiphora abbreviata) adults were collected on sticky boards near a pear tree at Providence, Rhode Island, in early May for a new State record.

TARNISHED PLANT BUG (Lygus lineolaris) was less abundant during early spring in VIRGINIA, and fruit injury was light. STINK BUGS caused some damage to apple and pear fruits in northern CALIFORNIA and WESTERN FLOWER THRIPS (Frankliniella occidentalis) damaged plum, nectarine, and a few almonds in California. FLOWER THRIPS (F. tritici) was generally higher this year in ILLINOIS with about 1.3 percent of apples damaged.

EUROPEAN RED MITE (Panonychus ulmi) infested deciduous fruits and walnuts in many areas of CALIFORNIA. Populations began building up on pears in Jackson County, OREGON, during May; more controls were required than usual through the summer. Control of European red mite continued to be difficult in ILLINOIS. Populations dropped in July and August, which is normal for this species, but which did not occur the previous 3 years. In INDIANA, the freeze of May 9-10 delayed European red mite development, but by mid-May most eggs had hatched and this spider mite became a major pest of commercial orchards. By mid-summer, many trees had populations sufficient to cause bronzing of leaves. European red mite began hatching the first week of May but most larvae were killed by a heavy frost on May 9-10 in the southern half of OHIO. Populations remained noneconomic until mid-June. Untreated trees showed some bronzing by late June and high populations, 100 mites per apple leaf, were noted during July and August. P. ulmi continued as the most expensive fruit pest in MICHIGAN. Because of cool weather, spring populations developed late in fruit areas. Populations built up to high numbers during July, August, and September. European red mite was the most troublesome arthropod pest of fruit in VIRGINIA. Generally, control was more satisfactory than the previous 2 seasons. Populations were moderate in Piedmont and eastern Virginia orchards. This pest was difficult to control during midseason in Washington County, MARYLAND. Infestations increased in the Erie area of PENNSYLVANIA, but were generally much lighter on apple in NEW JERSEY than in 1965. This spider mite was not as abundant as in the previous 2-3 years in CONNECTICUT, but was extremely heavy in unsprayed orchards in VERMONT. European red mite was of particular concern in NEW HAMPSHIRE even in regularly sprayed commercial orchards. Overwintering eggs began hatching during late May in central MAINE. Populations were generally low in commercial orchards throughout the season.

SPIDER MITES (Tetranychus spp.) were below 1965 levels in MAINE with only a few reports of activity and damage. Spider mite abundance was down compared with past 2 or 3 years in CONNECTICUT. Spider mites were the most difficult problem on fruits in MISSOURI. Eruopean red mite caused considerable trouble early in season, but by midsummer was replaced by TWO-SPOTTED SPIDER MITE (Tetranychus urticae), especially on apples. P. ulmi continued troublesome on peaches all summer. By mid-October, spider mites were very scarce in most orchards and low carry-over is anticipated. A SPIDER MITE (Tetranychus sp.) caused bronzing of apple foliage in northeast and south-central KANSAS. Spider mites were abundant on apples in Mesa and Delta Counties, COLORADO, where good spray programs were not used. Most injury was in neglected orchards or where populations were allowed to build up before miticides were applied. Spider mites, especially T. mcdanieli, were extremely injurious during summer. A large proportion of the apple and pear orchards showed heavy damage and control measures were generally inadequate in Colorado. Two-spotted spider mite was unusually low in western OREGON orchards until July when numbers became heavy. Some cherry orchards were defoliated early in Yamhill County. Spider mite damage was most serious ever noted in a peach orchard in Douglas County, WASHINGTON.

A FRUIT-TREE MITE (Bryobia rubrioculus) was not as severe as in past years on almond and peach trees in CALIFORNIA. FILBERT BUD MITE (Phytoptus avellanae) continued heavy on filbert in Benton County, OREGON. APPLE RUST MITE (Aculus schlechtendali) was widespread in southwestern MAINE, where damage ranged light to heavy in all varieties of apples.

CITRUS

Highlights:

YELLOW SCALE in February and BLACK SCALE in June and July were at highest levels in 15 years of record on Florida citrus. BROWN SOFT SCALE caused heavy damage to grapefruit in Arizona. Unaspis citri was economic on citrus and found in more groves during December than in 16 years of record in Florida. WOOLLY WHITEFLY infested citrus in California. CITRUS RUST MITE spread to many lemon groves on the Yuma Mesa of Arizona. Citrus rust mite was above normal abundance from September through November in Florida. CITRUS THRIPS was heavy on citrus in Arizona during March and April and severe on citrus from Tulare County southward in California.

YELLOW SCALE (Aonidiella citrina) was above average abundance during most of 1966 in FLORIDA. Populations in February were the highest recorded in 15 years. Populations were general in Tulare County and light in a few northern CALIFORNIA citrus areas. PURPLE SCALE (Lepidosaphes beckii) was widely, but normally distributed in light infestations in FLORIDA from January through March. Populations increased to a moderate level in November and December. Populations were generally low on citrus in Orange County, CALIFORNIA. BLACK SCALE (Saissetia oleae) was at a record high for January in Florida. Populations continued high and by June and July, were the highest recorded in 15 years; at the mid-July peak, 92 percent of the groves were infested and 81 percent had moderate or heavy infestations. Populations decreased during August and September to normal low levels for the remainder of year. Black scale was primarily a pest of citrus in CALIFORNIA, but infested some deciduous fruits; there were considerable variations in populations.

BROWN SOFT SCALE (Coccus hesperidum) was observed on citrus in Yuma and Maricopa Counties, ARIZONA. One large infestation in Maricopa County heavily damaged grapefruit trees. Brown soft scale infested citrus from Tulare County northward in CALIFORNIA. Numerous infestations of COTTONY-CUSHION SCALE (Icerya purchasi) were detected on citrus on the Yuma Mesa in Yuma County, and in areas of Maricopa County, ARIZONA. Most infestations were controlled by vedalia (Rodolia cardinalis) and chemical treatments. Populations infested citrus in a few areas of CALIFORNIA. GLOVER SCALE (Lepidosaphes gloverii) was above normal abundance and widely distributed in FLORIDA. Populations decreased during August to normal low level, but increased to moderate level in November and December. CHAFF SCALE (Parlatoria pergandii) was below normal abundance throughout 1966 in Florida. An ARMORED SCALE (Unaspis citri) increased and became economically important during the summer in Florida and was found in more groves (8 percent) during December than in 16 years of record.

CITRUS MEALYBUG (Pseudococcus citri) was a pest of coastal citrus in CALIFORNIA, usually held in check biologically. WHITEFLIES were slightly above normal abundance during January through March, but decreased to low levels during remainder of year in FLORIDA. WOOLLY WHITEFLY (Aleurothrixus floccosus) infested citrus in a 3 by 4-mile area in San Diego County, California.

CITRUS RUST MITE (Phyllocoptruta oleivora) populations were generally light on coastal citrus in CALIFORNIA. Since its detection in 1964, citrus rust mite has continued to spread to many lemon groves on the Yuma Mesa in Yuma County, ARIZONA. Citrus rust mite was the most troublesome pest of citrus in FLORIDA during January, when 49 percent of groves harbored economic infestations. A marked decrease to low level occurred during February. Populations increased above normal abundance in September and remained high and above normal through November. Controls were required for CITRUS BUD MITE (Aceria sheldoni) on lemons in San Diego, Orange, and Santa Barbara Counties, CALIFORNIA.

CITRUS FLAT MITE (Brevipalpus lewisi) damaged citrus throughout the summer in Yuma and Maricopa Counties, ARIZONA, and was a problem on citrus in Tulare County, CALIFORNIA. CITRUS RED MITE (Panonychus citri) populations were low or below normal levels throughout most of the year in FLORIDA. TEXAS CITRUS MITE (Eutetranychus banksi) peaked at normal high level during July, but was low during remainder of year in FLORIDA.

KATYDIDS were a local problem on citrus in Riverside and San Bernardino Counties, CALIFORNIA. FRUIT-TREE LEAF ROLLER (Archips argyrospilus) and ORANGE TORTRIX (Argyrotaenia citrana) damaged citrus in some southern areas of California.

Unusually heavy populations of CITRUS THRIPS (Scirtothrips citri) were observed during late March and April, but continued light to moderate during early summer in Yuma and Maricopa Counties, ARIZONA. Citrus thrips was a severe pest of citrus from Tulare County southward in CALIFORNIA. MELON APHID (Aphis gossypii) and MEALY PLUM APHID (Hyalopterus pruni) infested citrus early and late in the season in California. BROWN GARDEN SNAIL (Helix aspersa) was more prevalent than last year on citrus in San Diego and Orange Counties, California.

OTHER TROPICAL AND SUBTROPICAL FRUITS

OMNIVOROUS LOOPER (Sabulodes caberata) damaged some avocados in San Diego County, CALIFORNIA. NAVEL ORANGEWORM (Paramyelois transitella) infested figs in California.

BROWN GARDEN SNAIL (Helix aspersa) was prevalent on avocados in San Diego and Orange Counties, California.

SMALL FRUITS

Highlights:

GREEN JUNE BEETLE damaged ripening grapes in Oklahoma and Arkansas. Several WEEVILS were pests of strawberries in Oregon. EUROPEAN RED MITE damaged 10 percent of the grapes at Erie, Pennsylvania.

BEET ARMYWORM (Spodoptera exigua) damaged strawberries statewide in CALIFORNIA, and ROUGH-SKINNED CUTWORM (Proxenus mindara) infested strawberries in Santa Cruz and Santa Barbara Counties. RED-BACKED CUTWORM (Euxoa ochrogaster) caused heavy bud damage to young concord grapes in Benton County, WASHINGTON. BLACK ARMY CUTWORM (Actebia fennica) was light to moderate on blueberries in several areas of MAINE, with severe damage in some small areas. RASPBERRY LEAF ROLLER (Exartema permundanum) was a problem to Boyne raspberries in central MINNESOTA. STRAWBERRY LEAF ROLLER (Ancylis comptana fragariae) remained light in northeast KANSAS, but continued moderate in south-central area. In OREGON, economic numbers required controls on many young strawberry plantings in Washington County. Larvae of a LEAF ROLLER MOTH (Ptycholoma peritana) damaged strawberries in some locations in

CALIFORNIA and larvae of another LEAF ROLLER MOTH (Platynota stultana) infested grapes in a few locations. The latter species has not been a pest previously. GRAPE LEAF FOLDER (Desmia funeralis) was a pest of grapes in Stanislaus and Merced Counties, while LESSER CORNSTALK BORER (Elasmopalpus lignosellus) damaged strawberry crowns in Orange County, California. GRAPE PLUME MOTH (Pterophorus periscelidactylus) webbed grape foliage during early June in RHODE ISLAND. Economic numbers of ORANGE TORTRIX (Argyrotaenia citrana) infested boysenberries and Marion blackberries in Marion and Yamhill Counties, OREGON, and infested crated berries for processing in Washington County. GRAPE LEAF SKELETONIZER (Harrisina americana) was a common pest of grapes and caused some heavy damage where not detected in time for control measures in FLORIDA.

EASTERN RASPBERRY FRUITWORM (Byturus rubi) adults were common on raspberries in Peace Dale, RHODE ISLAND, during late May. During October, WHITE GRUBS (Phyllophaga spp.) killed spring planted strawberry plants in Greenwood County, KANSAS. GREEN JUNE BEETLE (Cotinis nitida) damaged ripening grapes during August in OKLAHOMA, and became an increasing problem to ripening fruit in northwestern ARKANSAS. Heavy populations of GRAPE FLEA BEETLE (Altica chalybea) caused moderate damage to grapes in Maricopa, Yuma, and Pinal Counties, ARIZONA. Peak populations were reached during April. A FLEA BEETLE (Altica sylvia) was noted in light numbers at Acton, MAINE. This pest has been absent in this area for the past 2 years. STRAWBERRY WEEVIL (Anthonomus signatus) activity was below 1965 levels in Maine, but adults cut some buds in the central area. Populations were heavy on blackberry at Narragansett, RHODE ISLAND, in mid-June. Adults caused light to medium bud injury to strawberry plantings in Prince Georges and Wicomico Counties, MARYLAND. A WEEVIL (Sciopithes obscurus) became more prevalent on strawberries and raspberries in southwestern WASHINGTON. The following weevils damaged strawberries in OREGON: Peritelinus oregonus caused serious leaf-ragging damage to individual strawberry fields in Linn and Marion Counties; all stages were present May 27. Trachyphloeus bifoveolatus continued abundant and caused substantial damage to strawberry plantings throughout the Willamette Valley. Probably Nemocestes puncticollis damaged strawberries in Columbia, Washington, and Marion Counties. Sciopithes obscurus infested spring planted strawberries in Columbia and Washington Counties, and red raspberries in Clackamas and Multnomah Counties, Oregon, where damage continued from July through September.

APHIDS (Chaetosiphon spp.) were light to medium on strawberry plantings during May at Glendale, MARYLAND. STRAWBERRY APHID (Chaetosiphon fragaefolii) was a problem on strawberries in Orange and San Luis Obispo Counties, CALIFORNIA. An APHID (Amphorophora rubi) was found on raspberry plants in the Aitkin area of MINNESOTA during late June.

MEADOW SPITTLEBUG (Philaenus spumarius) nymphs were unusually heavy on small fruits during May in Douglas County, OREGON. GRAPE PHYLLOXERA (Phylloxera vitifoliae) infested grapes in San Joaquin County, CALIFORNIA, with mostly old varieties being affected. A LEAFHOPPER (Erythroneura sp.) was common in most grape-growing areas of California and damaged grapevines in OKLAHOMA during the fall. A FULGORID PLANTHOPPER (Ormenia pruinosa) was heavy on strawberry plants and some ornamental shrubs in Champaign County, ILLINOIS, during late June. GRAPE MEALYBUG (Pseudococcus maritimus) increased in many vineyards of the Yakima Valley of WASHINGTON following the light crop of 1965 and poor control programs. A PYRRHOCORID BUG (Largus cinctus californicus) seriously damaged strawberries in San Luis Obispo County, CALIFORNIA. In MAINE, BLUEBERRY THRIPS (Frankliniella vaccinii) infestations were generally spotty and found mainly in coastal areas. Infestations were most numerous in Washington, Hancock, and Waldo Counties.

BLUEBERRY MAGGOT (Rhagoletis mendax) emergence began June 26 in Washington County, MAINE, with peak flights during early July. A GALL MIDGE (Contarinia vaccinii) was active in Washington County, Maine, during mid-June. Infestations and damage were light. Larvae of a MIDGE (Asphondylia sp.) were found feeding on the inside of grape berries in Maricopa County, ARIZONA, during early May. Populations were light and caused little economic damage. This is a new grape pest in Arizona.

A SPIDER MITE (Eotetranychus willametti) damaged grapes in Fresno and Amador Counties, CALIFORNIA. Another SPIDER MITE (Tetranychus mcdanieli) damaged several European varieties of grapes in the Yakima Valley of WASHINGTON, and was more serious than previously noted in a peach orchard in Douglas County. TWO-SPOTTED SPIDER MITE (Tetranychus urticae) was heavy on strawberries by the first week of June in Malheur and Willamette Valley counties, OREGON, and damaged inadequately sprayed strawberries during the winter in Bradford County, FLORIDA. Tetranychus spp. populations built up during May to injurious levels on strawberry plantings in Prince Georges and Wicomico Counties, MARYLAND, and caused serious postharvest problems on strawberries at Glendale. EUROPEAN RED MITE (Panonychus ulmi) damaged 10 percent of the grapes in the Erie area of PENNSYLVANIA. SPIDER MITES were abundant on raspberries in various parts of MINNESOTA during late summer and fall. CYCLAMEN MITE (Steneotarsonemus pallidus) was troublesome for growers of everbearing strawberry plants in Minnesota. GARDEN SYMPHYLAN (Scutigerella immaculata) was less damaging to annual crops in southwestern WASHINGTON because of a dry spring, but continued to be a problem on raspberries and strawberries.

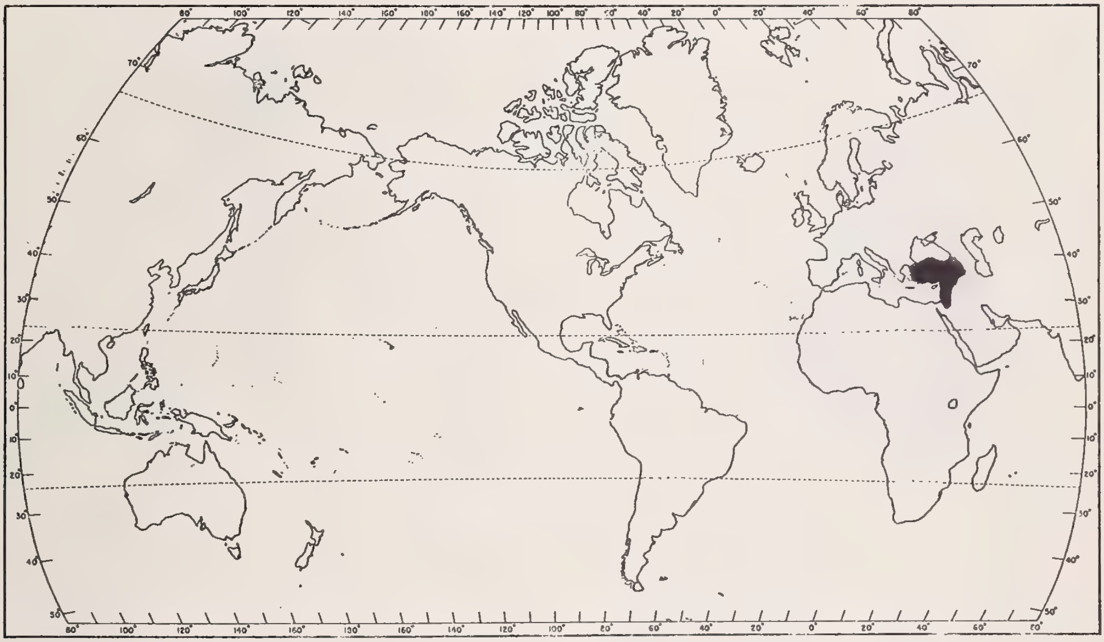
INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

A LEAF BEETLE (*Marseulia dilativentris* (Reiche))

Economic Importance: This chrysomelid is at times a serious pest of field crops in Israel, especially in the Hills of Ephraim, where the beetles appear in vast numbers unexpectedly and often completely destroy fields of grain. Adults cause most of the damage, but the extent of injury depends upon the age of the plants and on the time of attack. If the plants are just beginning to sprout, the crop may be completely destroyed, but in more advanced plantings, the crop may recover and replanting will not be necessary.

Distribution: Recorded in Israel, Jordan, Lebanon, Syria, and Turkey.

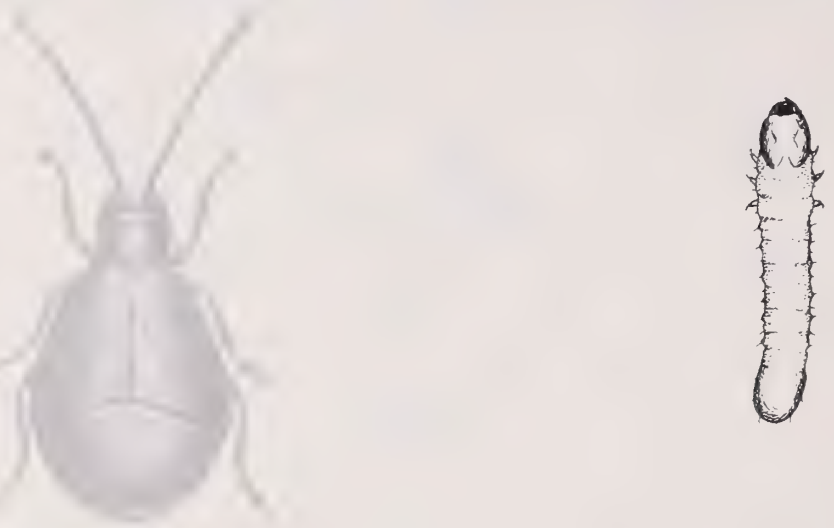
Hosts: Found on many different plants. Among the cultivated hosts, wheat and barley appear to be preferred, but vetch, oats, clover, and broad beans are often attacked. In addition, soybeans, peas, table beets, sugarbeets, flax, poppy, radish, cabbage, turnip, spinach, and carrot are recorded cultivated hosts.



General Distribution of *Marseulia dilativentris* (Reiche)

Life History and Habits: The biology as recorded in Israel is as follows: Adults appear in December when wheat and barley plants reach a height of 2-4 inches. Feeding (skeletonizing of leaves) begins almost immediately. As many as 12 beetles may be found on one small plant. Copulation and oviposition start a few days after emergence. Adults become scarce by the end of January. Females oviposit in the soil near the plant; sometimes on the plant itself. The larva spends its life in the soil, pupating there. The movements of the larva are quick and supple. Details of the life history of the larva and time of pupation are not recorded. Adults emerge the following December.

Description: ADULT - Length, 2-3 mm. Oblong; brilliant bluish black. Head almost triangular, very large at base, somewhat roughened with 2 small tubercles arising in middle and little longitudinal elevations between antennae; eyes rounded, somewhat convex; antennae brownish black, 12-segmented. Thorax as long as head, slightly broader at apex, sides slightly rounded; surface minutely punctate (appears smooth to the unaided eye). Pronotum triangular, smooth. Elytra slightly wider at base than thorax and twice its length, very wide toward end and completely enfolding abdomen, obliquely truncate at rear end; surface punctate. Underneath, ventral surface and abdomen smooth (abdomen appears unsegmented). Tarsi with grayish pubescence; femur enlarged in male. Female abdomen enlarged, passing the elytra considerably as in the blister beetles. Elytra do not quite enfold abdomen in females and femur more slender. EGG - Small, rounded, yellowish. LARVA - Young larva threadlike, less than 1 mm. in length, with chitinous plate at posterior end of body.



Adult and Larva of *Marseulia dilativentris* (Reiche)

Selected References: 1. Rivnay, E. 1962. Field Crop Pests in the Near East. 450 pp., The Hague. 2. Bodenheimer, F. S., and Klein, H. Z. 1928. Z. Angew. Ent. 14:343-355. Illustration of larva courtesy of Rivnay, permission of Dr. W. Junk, Publishers. Figure of adult from Bodenheimer and Klein.

Prepared in Survey and Detection
Operations in cooperation with
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